IN THE CLAIMS:

1.(Original) A microbubble composition for binding to a target, comprising:

gas-filled microbubbles in a liquid carrier;

said microbubbles substantially having crenated microbubble membranes; and said membranes including binding targeting molecules that bind to the target.

2.(Original) The microbubble composition of claim 1, wherein the microbubble membranes comprise a lipid, protein, polymer or other surfactant, or a combination thereof.

3.(Original) The microbubble composition of claim 1, wherein the gas is substantially insoluble in blood.

4.(Original) The microbubble composition of claim 3, wherein the gas is a fluorine-containing gas.

5.(Original) The microbubble composition of claim 1, wherein the microbubbles have a mean diameter of about 1 to about 10 micrometers.

6.(Original) The microbubble composition of claim 1, wherein the target is a receptor, and wherein the binding targeting molecules bind to the receptor.

7.(Original) The microbubble composition of claim 6, wherein the receptor is selected from the group consisting of extracellular matrix proteins, adhesion molecules, G-protein coupled receptors, cell surface proteins, cytokines, glycoproteins, peptides, lipids, glycolipids, carbohydrates or combinations thereof.

8.(Original) The microbubble composition of claim 1, wherein the targeting molecules are selected from the group consisting of peptides, peptide mimetics, aptamers, proteins, antibodies and antibody fragments, oligosaccharides, and small organic molecules.

9.(Original) A microbubble composition useful for binding to a target, comprising:

a suspension of gas-filled microbubbles in a liquid carrier, said microbubbles substantially having microbubble membranes having surface projections, said membranes further including binding targeting molecules that bind to the target.

10.(Original) The microbubble composition according to claim 9, wherein said surface projections comprise membrane folds.

11.(Original) The microbubble composition of claim 9, wherein the membranes comprise a lipid, protein or surfactant, and wherein the microbubbles have a mean diameter of about 1 to about 10 micrometers.

12.(Original) The microbubble composition of claim 9, wherein the gas is substantially insoluble in blood.

13.(Original) The microbubble composition of claim 12, wherein the target is a cell membrane bound receptor, and wherein the targeting molecules bind to the receptor.

14.(Original) The microbubble composition of claim 9, wherein the targeting molecules are selected from the group consisting of peptides, peptide mimetics, aptamers, proteins, antibodies and antibody fragments, oligosaccharides, and small organic molecules.

15.(Original) The microbubble composition of claim 13, wherein the receptor is selected from the group consisting of extracellular matrix proteins, adhesion molecules, G-protein coupled receptors, cell surface proteins, cytokines, glycoproteins, peptides, lipids, glycolipids, carbohydrates or combinations thereof.

16.(Original) A microbubble composition useful for binding to a target, comprising:

a suspension of microbubbles in a liquid carrier, said microbubbles predominantly having non-spherical microbubble membranes, said non-spherical microbubble membranes exhibiting increased deformability under shear relative to corresponding spherical microbubble membranes, and said microbubble membranes comprising a binding targeting molecule for binding to the target.

17.(Original) The microbubble composition of claim 16, wherein the membranes comprise a lipid, protein, polymer or other surfactant, or a combination thereof.

18.(Original) The microbubble composition of claim 16, wherein said gas is substantially insoluble in blood.

19.(Original) The microbubble composition of claim 16, wherein the microbubbles have a mean diameter of about 1 to about 10 micrometers.

20~~21~~.(Currently Amended) The microbubble composition of claim 16, wherein the target is a cell membrane bound receptor, and wherein the targeting molecules bind to the receptor.

21~~22~~.(Currently Amended) A method for binding microbubbles to a target, comprising:

contacting the target with a microbubble composition according to ~~any of~~ claim~~s~~ 1~~, 9 and 16~~.

2223.(Currently Amended) A method according to claim 2122, wherein microbubble membranes of the microbubble composition include a targeting molecule attached by a spacer arm.

2324.(Currently Amended) A method for preparing a targeted microbubble composition, comprising:

forming gas-filled microbubbles having spherical microbubble membranes suspended in a liquid carrier;

converting the spherical microbubble membranes to non-spherical microbubble membranes; and

attaching to or incorporating into said microbubble membranes targeting molecules for binding to a target.

2425.(Currently Amended) The method of claim 2324, wherein said targeting molecules are attached to or incorporated into the membranes prior to said converting.

2526.(Currently Amended) The method of claim 2324, wherein said targeting molecules are attached to or incorporated into the membranes after said converting.

2627.(Currently Amended) The method of claim 2324, wherein said converting includes causing a partial release of gas from within the spherical microbubble membranes.

2728.(Currently Amended) The method of claim 2627, wherein said converting includes subjecting the spherical microbubble membranes to pressure.

2829.(Currently Amended) The method of claim 2738, wherein said pressure is applied by hydrostatic pressure, ultrasonic waves, or an osmotic pressure gradient across the microbubble membrane.

2930.(Currently Amended) The method of claim 2324, wherein the targeting molecules are selected from the group consisting of peptides, peptide mimetics, aptamers, proteins, antibodies and antibody fragments, oligosaccharides, and small organic molecules.

3031.(Currently Amended) A pharmaceutical composition, comprising a microbubble composition according to ~~any of~~ claims ~~1, 9 and 16~~, wherein the liquid carrier is a pharmaceutically acceptable liquid carrier.

3132.(Currently Amended) A pharmaceutical composition according to claim 3031, which is a therapeutic composition.

3233.(Currently Amended) A pharmaceutical composition according to claim 3031, which is a diagnostic composition.

3334.(Currently Amended) A pharmaceutical composition according to claim 3233, which is an ultrasound contrast agent.

3435.(Currently Amended) A method for ultrasound imaging in a patient, comprising:

introducing into the patient an ultrasound contrast agent according to claim 3334; and

developing an ultrasound image based upon said composition.

3536.(Currently Amended) A method for therapeutic treatment of a patient, comprising administering to the patient a therapeutic composition according to claim 3132.